

RemarksDrawings

Formal drawings are attached hereto.

Claim Rejections – 35 USC 103

Claims 1, 2 5-10 were rejected under 35 USC 103 as unpatentable over Acatrinei in view of Ker.

Acatrinei:

Acatrinei deals with a power factor correction circuit (see title, and column 1, line 6-7) and not with a charge pump. Power factor is discussed in column 1, lines 36-44, where it is defined as Real Input Power (average power) consumed to Apparent Input Power (rms power) and is a decimal fraction between 0 and 1. As discussed in column 1, lines 65 – column 2, line 2, when the load on an AC generator is non-linear (e.g. contains capacitors and inductors) the current waveform in the generator's circuit becomes very different in shape and phase to the voltage waveform, causing the power factor (PF) to decrease. While passive components (other inductors and capacitors) can be used to improve the PF, these are typically large and costly (column 2, lines 65). Active power factor correction circuits try to create a current waveform that is similar to the voltage waveform to improve the PF. For instance, as described in column 3, lines 2-25, the AC generator output is filtered and rectified and then passed through an inductor that charges up. An electronic switches the current through the inductor on and off to achieve the desired output current waveform.

It is important to note that Acatrinei therefore does not provide a voltage increase. When the impedances Z1 and Z2 (elements 1 and 2) in Figure 2A, or the inductor 41 and capacitor 42 in Figures 2B or 3A are connected in series in such a way that the node at which they are joined is at the same voltage. **Thus they do not provide a higher combined voltage.**

Present application:

The present application, on the other hand, deals with a charge pump, which serves to convert from one voltage level to a higher voltage level (see page 1, lines 10-12). This is done by serially connecting the DC power supply with a charged up capacitor in serial fashion so that the

high voltage side of the power supply connects to the low voltage side of the capacitor so that the voltages combine (see embodiments discussed with respect to Figures 8 and 9). Claim 1 has been amended to make this clear and specifically point out that the circuit provides for an increased combined voltage. In another embodiment, a pulsed voltage source is provided and several capacitors are charged up and then serially connected to combine their voltages, as discussed with respect to Figures 4 and 7. Claims 5 and 8 have been amended to make this clear and specifically point out that the circuit provides for an increased combined voltage. In all of the embodiments use is made of LVTSCRs, thereby providing for greater current densities and lower parasitic capacitance (page 4, line 20-page 5, line 5) and also allowing use to be made of the S-shaped snapback characteristics of the LVTSCR to provide for self triggering on and off.

Acatrinei therefore does not teach the present invention.


Since Ker also does not teach a charge pump (for converting from one DC voltage to a higher DC voltage), in which LVTSCRs are used, the combination with Acatrinei also fails to teach the present invention.

The examiner is thanked for allowing claims 3, 4, and 11.

In light of the above explanation and amendment to the claims, it is respectfully submitted that all of the claims are now all distinguishable over the cited art. Early allowance of the claims is therefore requested.

Respectfully Submitted,

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